Auto-DR for Ancillary Services and Integration of Intermittent Renewable Resources: PG&E Pilots

How can Auto-DR help Intermittent Renewable Resources?

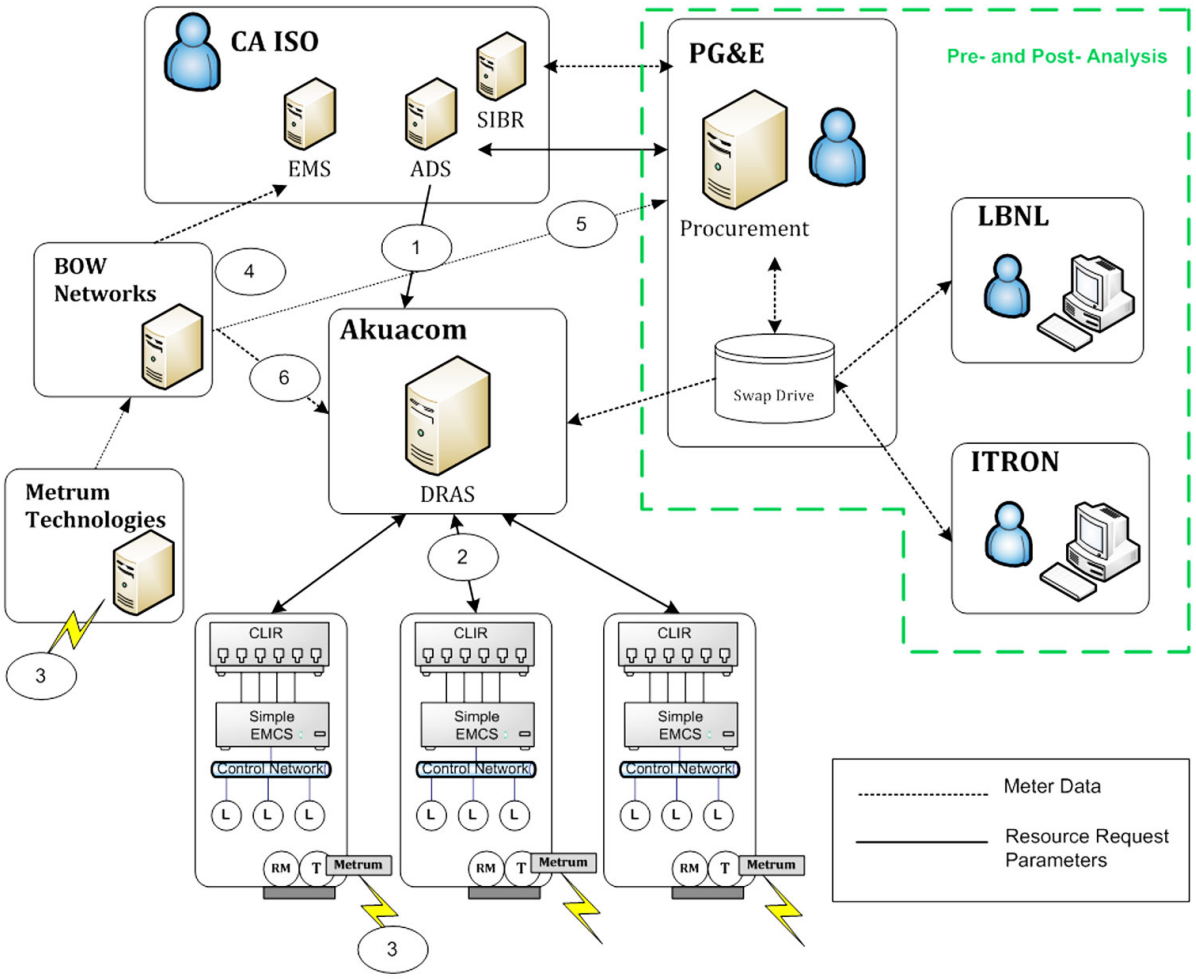
Activities

- PG&E has started to look at the technical feasibility of providing various services to the California Independent System Operator (CAISO) to mitigate against the following:
  - Increasing Ramping Requirements
  - Over Generation
  - Intra-hour variability
- Two pilots over the course of the 2009 – 2011 Demand Response (DR) Cycle to address feasibility of providing services to CAISO.

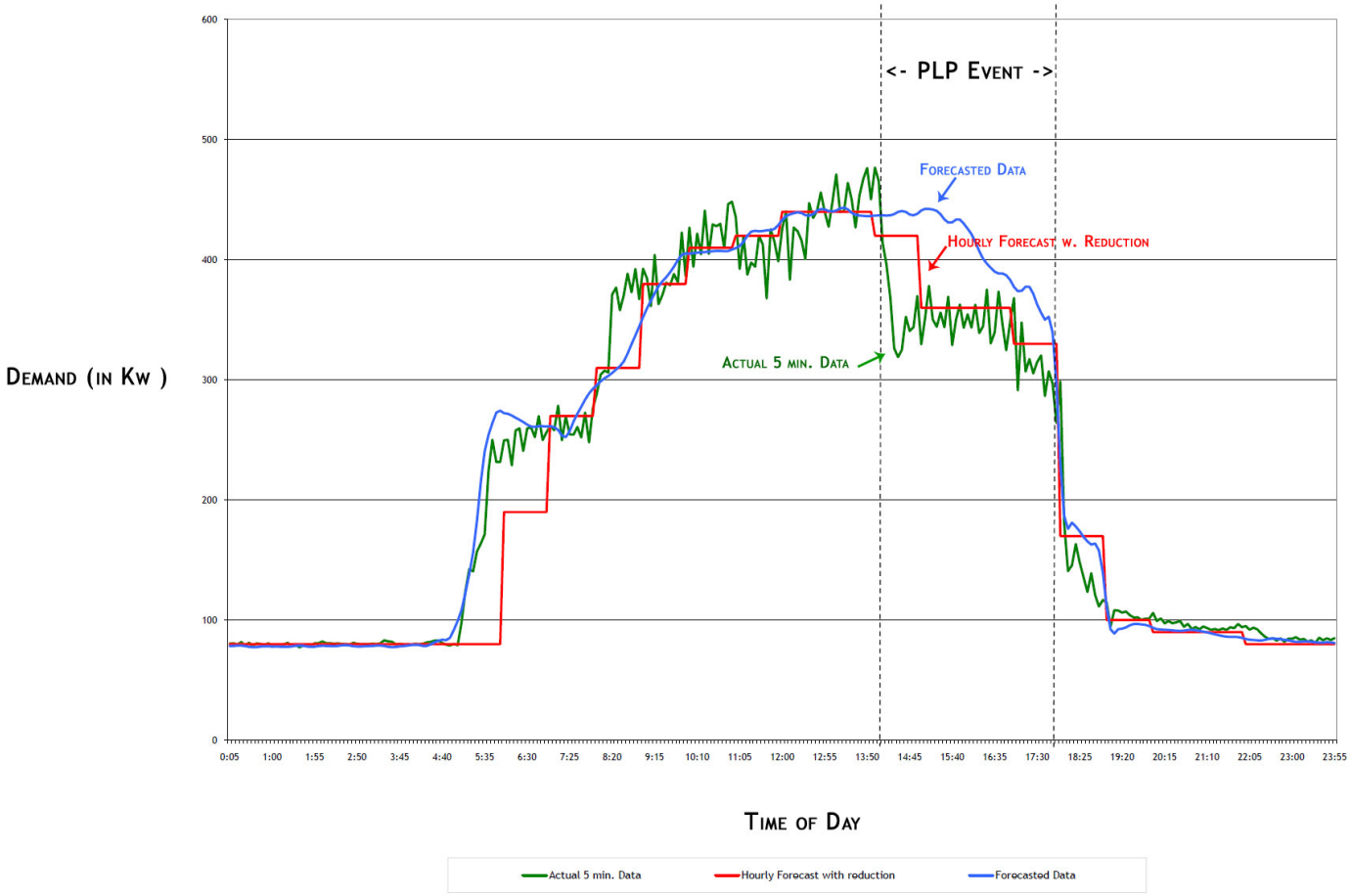
2009 Participating Load (PL) Pilot

- The PL Pilot was able to demonstrate the following:
  - Integration with CAISO's Automated Dispatch System (ADS) with Auto-DR's Demand Response Automated Server (DRAS)
  - Creation of a 'feedback' mechanism to allow customer resources to provide close to the instructed supply (demand reduction) by the CAISO

PLP Architecture



PLP Event


Demand (in Kw)
600
500
400
300
200
100
0
<- PLP Event ->
Forecasted Data
Hourly Forecast w. Reduction
Actual 5 min. Data
0:05
1:00
1:55
2:50
3:45
4:40
5:35
6:30
7:25
8:20
9:15
10:10
11:05
12:00
12:55
13:50
14:45
15:40
16:35
17:30
18:25
19:20
20:15
21:10
22:05
23:00
23:55
Time of Day
Actual 5 min. Data
Hourly Forecast with reduction
Forecasted Data

2010-2011 Intermittent Renewable Resource (IRR) Pilot

- The IRR Pilot will demonstrate the following:
  - Whether the coupling of DR with imbedded or thermal energy storage can provide regulation up/down and 5 minute real time energy services to the CAISO
  - Integration with CAISO's Automatic Generator Control (AGC) with Auto-DR's Demand Response Automated Server (DRAS)
  - Analyze the optimization of thermal energy storages and the possibility to provide various services that may be able to mitigate intermittency

Conclusion

- Based on the Pilots, Auto-DR technology may be able to provide the proper communication structure to interface with the CAISO or any other system operator (i.e., UDC, etc…)